IRMA

The last and most intense typhoon of the year was first noted on synoptic charts as a quasi-stationary circulation in the western Carolines on the 2nd of November. By the 6th, a strong band of westerlies developed south of 5N. The long fetch of these winds resulted in increased seas which affected the atolls in the area. Early on the 8th, satellite data showed that the cloudiness associated with the system was showing increasing organization, and tropical storm Irma was born.

Later in the afternoon, Woleai Atoll reported 30 kt with gusts to 50 kt as the storm center was located by reconnaissance aircraft 50 n mi west of the station (Figure 5-57). Reports from Eauripik Atoll indicated that high seas had inundated 200 ft inland and several houses were washed away.

Irma's track was erratic for the next 24 hours until she began a northwestward heading, passing 30 n mi west of Ulithi the morning of the 10th. Reports from the atoll indicated 30 kt, gusts to 60 kt and a minimum sea level pressure of 996.3 mb. Of the Yap district only Fais and Ulithi atolls had appreciable damage and this was limited to crops.

Reaching typhoon force the evening of the 10th, Irma described a smooth northwesterly track, attaining super-typhoon status late on the 11th. Reaching peak winds in excess of 150 kt during the 12th and remaining in the 130-kt-plus classification for a 36-hour period, Irma began to recurve around the subtropical ridge at 127E. Paralleling the Ryukyu Island chain and accelerating in forward speed as she came under the influence of the westerlies, Irma transformed to extratropical characteristics as she sped south of Honshu on the 15th at 35 kt. During the passage of the eye 65 n mi east of Okinawa, highest winds experienced on the island were at Naha, which recorded 48 kt gusting to 80 kt, while Kadena AB reported 45 kt with gusts to 64 kt.

At sea, the 2,474-ton Panamanian HUALIEN was run aground at Peng Chia Hsu Island northeast of Taipei presumably by heavy swells. The 13,616-ton Liberian ore carrier BANALUNA bound from Leyte Island, Philippines to Tobata, Japan was reported missing and feared to have went down during Irma.

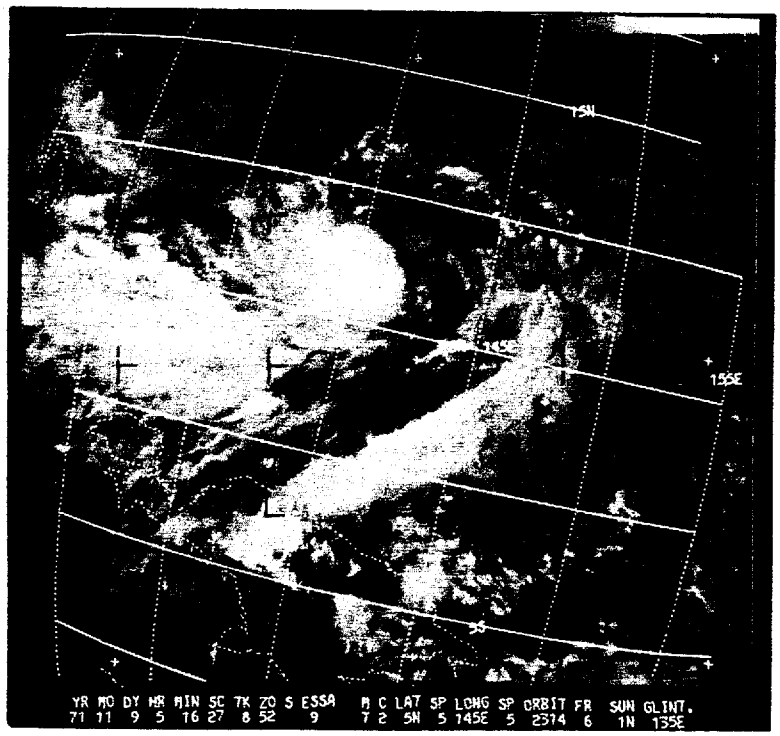

FIGURE 5-57. ESSA-9 PHOTO OF IRMA AS A TROPICAL STORM LOCATED WEST OF WOLEAI ATOLL ON 9 NOVEMBER.

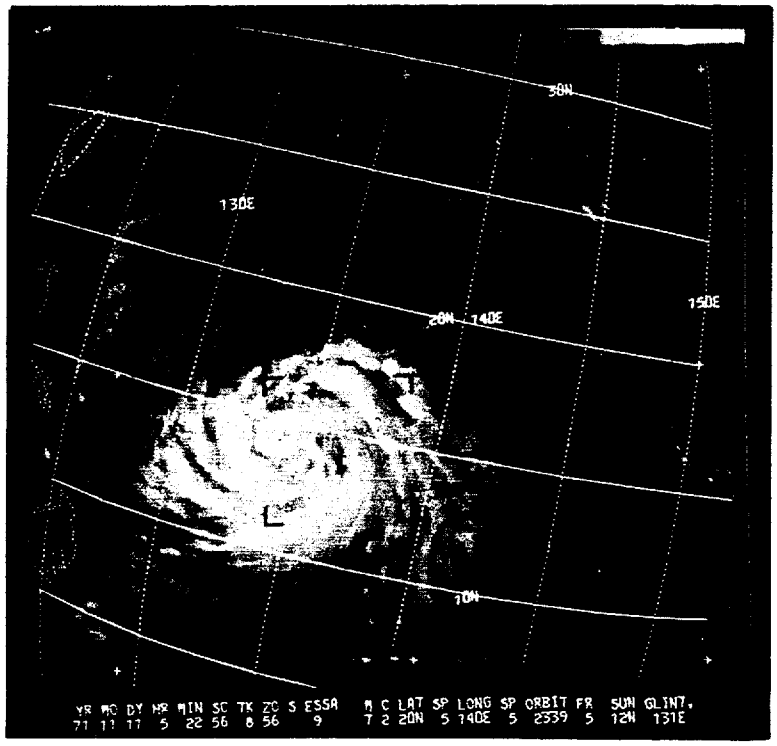

FIGURE 5-58. TYPHOON IRMA DURING HER RAPID DEEPENING STAGE IN THE PHILIPPINE SEA ON THE AFTERNOON OF 11 NOVEMBER.

The most significant aspect to typhoon Irma was the explosive deepening rate of 4 mb per hour which took place during a 24-hour period spanning the 10th and 11th of November (Figures 5-58 and 5-59). The deepening culminated in a dropsonde reading of 884 mb, which ranked the storm's central pressure among the lowest on record.*

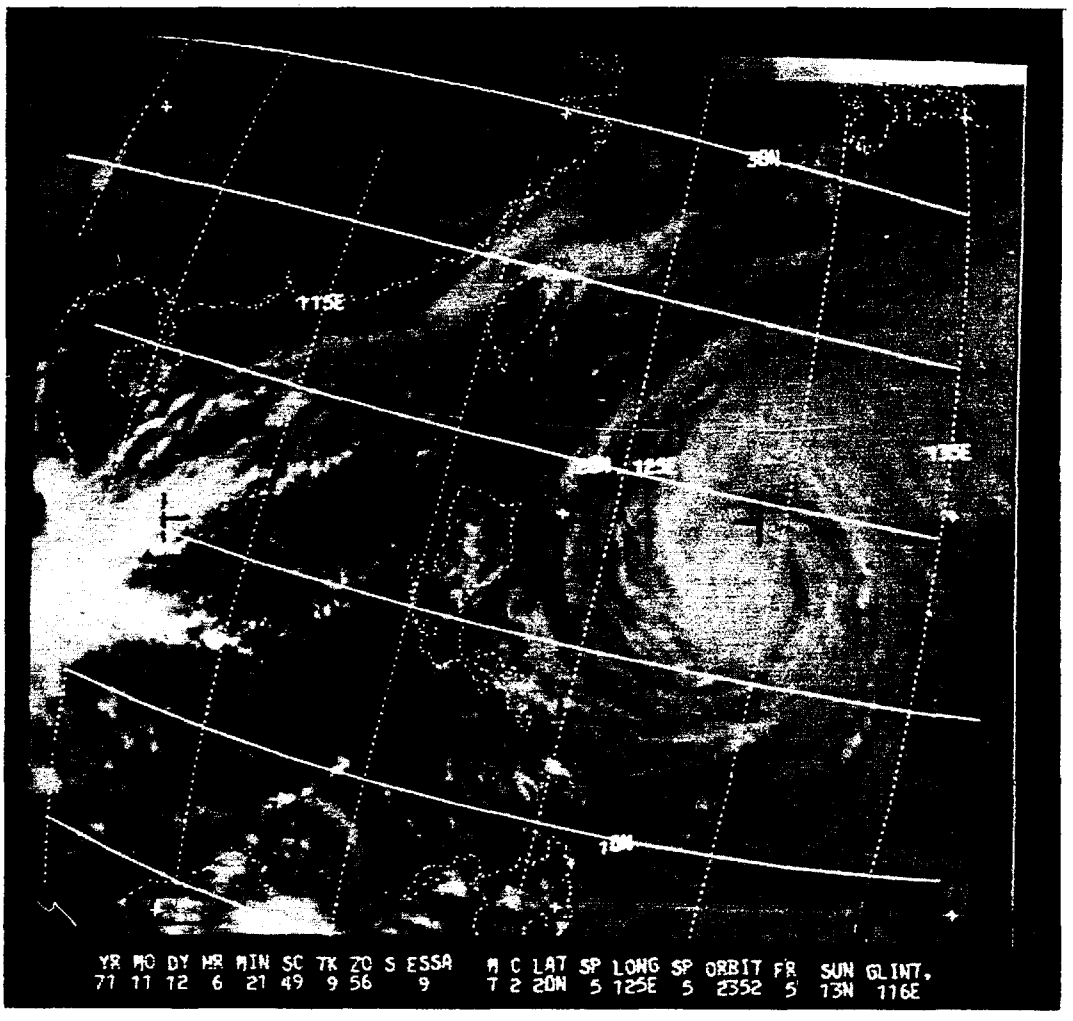

FIGURE 5-59. SUPER TYPHOON IRMA AS PHOTOGRAPHED BY ESSA-9 EAST OF LUZON ON 12 NOVEMBER.

*Typhoon's Joan (Aug 59) - 884 mb, Nina (Aug 53) - 883 mb, Ida (Sep 58) - 877 mb (see Jordan, 1961).

TYPHOON IRMA
EYE FIXES FOR CYCLONE NO. 37
08 NOV - 15 NOV 71

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TI/TO	EYE FORM	ORIEN-TATION	EYE DIA	THKN WALL CLD	REMARKS	POSTT. OF RADAR
1	080305Z	7.2N 142.8E	54-P- 5-15	700MB	40	35	996	3008	12/11	----	-----	--	--	NO RDR PRES-700 CNTR 20NM E	
2	081000Z	7.4N 143.2E	54-P- 5-10	700MB	30	----	1003	3079	11/09	----	-----	--	--	NO RDR PRES	
3	081600Z	7.2N 142.4E	54-P- 5-15	700MB	30	----	1003	3082	10/09	----	-----	--	--	NO RDR PRES	
4	082204Z	8.1N 141.8E	54-P-15---	700MB	30	35	995	3054	13/12	----	-----	--	--	SFC CNTR ILL DEF	
5	090400Z	8.0N 141.1E	54-P- 8- 2	700MB	48	90	991	3030	13/12	----	-----	--	--	WC FRMG RAPIDLY	
6	090517Z	7.5N 141.0E	SATELIT---	STG X	DIA	5	CAT	5.0						FIRST BLTN	
7	090955Z	8.3N 141.4E	54-P- 3- 3	700MB	30	----	981	2941	15/11	ELIP	E-W	15X10	5	WEAK CLSD WC	
8	091243Z	8.7N 141.4E	54-P- 2-10	700MB	35	----	983	2963	15/10	ELIP	E-W	15X10	--	WC OPEN NW-MDT FB	
9	091526Z	9.3N 141.0E	54-P- 3- 9	700MB	45	----	983	2954	14/10	ELIP	E-W	20X10	5	CLSD WC	
10	092147Z	9.7N 140.5E	54-P- 5- 5	700MB	40	60	984	2947	12/11	CIRC		20	10	FAIR RDR PRES	
11	100019Z	10.2N 140.2E	54-P- 8- 7	700MB	45	85	987	2963	12/10	CIRC		10	10	CLSD WC	
12	100311Z	10.7N 139.7E	54-P- 5- 5	700MB	45	50	985	2947	13/09	CIRC		20	10	CLSD WC	
13	100619Z	11.0N 138.5E	SATELIT---	STG C											
14	101000Z	11.9N 138.8E	54-P- 2- 8	700MB	50	----	983	2951	15/13	----	-----	--	5	WC SE ONLY	
15	101527Z	12.8N 137.4E	54-P- 2- 3	700MB	60	----	981	2932	15/13	----	-----	--	--	POORLY DEFINED	
16	102205Z	13.6N 136.1E	54-P- 2---	700MB	60	70	969	2840	18/16	CIRC		15	10	700MB FIX	
17	110340Z	14.2N 134.8E	54-P- 3---	700MB	80	70	961	2752	18/13	CIRC		15	8	700MB FIX	
18	110523Z	14.2N 134.0E	SATELIT---	STG X	DIA	4	CAT	3.0						STRONGER	
19	111155Z	14.9N 132.8E	54-P- 2- 1	700MB	80	100	910	2295	21/11	CIRC		6	5	CLSD WC	
20	111555Z	15.6N 132.3E	54-P- 3- 1	700MB	80	120	884	2060	24/11	CONC	-	40X 7	5	SFC WIND OBSERVED DUE TO INT LTNG	
21	112200Z	16.6N 130.7E	54-P- 6- 2	700MB	70	130	884	2040	26/11	CIRC		5	--	CLSD WC	
22	120300Z	17.5N 129.6E	54-P- 3- 2	700MB	80	130	893	2120	20/12	CIRC		5	2	CLSD WC	
23	120622Z	17.7N 129.2E	SATELIT---	STG X	DIA	4	CAT	4.0							
24	120934Z	18.4N 128.7E	54-P- 2- 2	700MB	107	----	----	2131	26/11	CIRC		10	4	CLSD WC	
25	121505Z	19.0N 128.0E	54-P- 2- 2	700MB	127	----	----	2158	21/18	CIRC		12	5	CLSD WC	
26	122220Z	19.8N 127.7E	54-P- 2- 4	700MB	115	130	913	2313	16/13	CIRC		10	5	CLSD WC	
27	130110Z	20.1N 127.4E	54-P- 2- 5	700MB	110	120	926	2423	17/11	CIRC		10	6	WC OPEN E	
28	130310Z	20.4N 127.3E	54-P- 2- 5	700MB	110	130	925	2442	17/15	CIRC		10	--	WC OPEN E-S	
29	130526Z	20.5N 127.1E	SATELIT---	STG X	DIA	3	CAT	4.0						SML EYE VISIBLE	
30	130700Z	21.0N 127.1E	54-P- 2---	700MB	110	90	929	2478	16/13	CIRC		15	8	WC OPEN SW	
31	131000Z	21.4N 127.0E	54-P- 2---	700MB	80	----	938	2518	18/15	CIRC		6	10		
32	131200Z	21.7N 127.0E	54-P- 7---	700MB	95	----	938	2557	18/14	CIRC		5	--	NO WC	
33	131532Z	22.0N 126.8E	54-P- 2- 3	700MB	73	----	----	2597	19/18	----	-----	--	--	NO RDR PRES	
34	131844Z	22.5N 126.8E	54-P- 3- 4	700MB	85	----	----*	2612	18/17	CIRC		12	2	WK RDR PRES	
35	131845Z	22.7N 127.0E	LND RDR---							----	-----	--	--	STN MIYAKO JIMA	
36	132000Z	22.6N 126.8E	LND RDR---							----	-----	--	--	STN 47927	
37	132143Z	23.0N 127.0E	54-P- 2- 3	700MB	81	----	----*	2643	16/16	CIRC		12	2	CLSD WC-WEAK	
38	140100Z	23.4N 127.1E	LND RDR---							----	-----	--	--	STN 47927	
39	140200Z	23.6N 127.2E	LND RDR---							----	-----	--	--	STN 47927	
40	140350Z	23.9N 127.3E	54-P------	-----	----	----	----*	----	--/--	----	-----	--	--		
41	140400Z	23.9N 127.3E	LND RDR---							----	-----	--	--	STN 47927	
42	140400Z	23.7N 127.3E	LND RDR---							----	-----	--	--	STN 47936	
43	140400Z	23.8N 127.3E	54-P- 2- 5	700MB	85	100	954	2673	16/15	CIRC		40	--	POORLY DEFINED	
44	140500Z	23.9N 127.5E	LND RDR---							----	-----	--	--	STN 47936	
45	140500Z	24.0N 127.4E	LND RDR---							----	-----	--	--	STN 47927	
46	140600Z	24.2N 127.6E	LND RDR---							----	-----	--	--	STN 47936	
47	140600Z	24.2N 127.5E	LND RDR---							----	-----	--	--	STN 47927	
48	140624Z	24.3N 128.0E	SATELIT---	STG X	DIA	4	CAT	3.0						SML EYE VISIBLE	

TYPHOON IRMA
EYE FIXES FOR CYCLONE NO. 37
08 NOV - 15 NOV 71

FIX NO.	TIME	POSIT	UNIT-METHOD -ACCY	FLT LVL	FLT LVL WND	OBS SFC WND	OBS MIN SLP	MIN 700MB HGT	FLT LVL TI/TO	EYE FORM	UNIFN- TAITON	EYE DIA	THKN WALL CLD	REMARKS	POSIT OF RADAR
49	140700Z	24.4N 127.6E	LND RDR-----							----	-----	--	--	STN 47936	
50	140700Z	24.3N 127.7E	LND RDR-----							----	-----	--	--	STN 47927	
51	140800Z	24.9N 127.7E	LND RDR-----							----	-----	--	--	STN YOZE DAKE	
52	140900Z	24.9N 127.9E	LND RDR-----							----	-----	--	--	STN 47927	
53	140900Z	24.9N 128.1E	LND RDR-----							----	-----	--	--	STN 47936	
54	140935Z	25.0N 128.0E	54-P- 2-10	700MB	85	130	986	2694	15/19	----	-----	--	--	NO WC	
55	141000Z	25.0N 128.0E	LND RDR-----							----	-----	--	--	STN 47936	
56	141000Z	25.3N 128.0E	LND RDR-----							----	-----	--	--	STN 47927	
57	141100Z	25.4N 128.0E	LND RDR-----							----	-----	--	--	STN 47936	
58	141200Z	25.3N 128.0E	LND RDR-----							----	-----	--	--	STN 47936	
59	141725Z	26.2N 129.5E	54-P- 7---	700MB	70	----	986	2731	15/12	CIRC		10	--	POORLY DEFINED	
60	141800Z	26.4N 129.8E	LND RDR-----							----	-----	--	--	STN 47936	
61	142000Z	26.8N 130.3E	VQ----------	-----	----	----	-----	----	--/--	----	-----	--	--	STN 47909	
62	142100Z	26.9N 131.0E	VQ----------	-----	----	----	-----	----	--/--	----	-----	--	--	STN 47909	
63	142145Z	27.0N 130.9E	54-P- 5---	700MB	85	60	988	2783	13/15	----	-----	--	--	POOR RDR PRES	
64	142200Z	27.1N 131.2E	VQ----------	-----	----	----	-----	----	--/--	----	-----	--	--	STN 47909	
65	142300Z	27.7N 131.8E	VQ----------	-----	----	----	-----	----	--/--	----	-----	--	--	STN 47909	
66	150000Z	27.7N 132.3E	VQ----------	-----	----	----	-----	----	--/--	----	-----	--	--	STN 47909	
67	150405Z	28.6N 133.7E	54-P- 4- 5	700MB	100	95	985	2758	16/14	----	-----	--	--	NO RDR PRES	
68	150531Z	28.5N 134.8E	SATELLI---	STG X	DIA	4	CAT 2.5								
69	150907Z	30.0N 134.2E	54-P- 5- 5	700MB	70	----	987	2774	13/13	----	-----	--	--	NO RDR PRES	

TYPHOON IRMA

0000Z 08 NOV TO 1200Z 15 NOV

	BEST TRACK			WARNING			24 HOUR FORECAST				48 HOUR FORECAST				72 HOUR FORECAST			
							ERRORS						ERRORS				ERRORS	
	POSIT		WIND	POSIT		WIND	DST	WIND	POSIT	WIND	DST	WIND	POSIT	WIND	DST	WIND	POSIT	WIND	DST	WIND
080000Z	6.9N	142.6E	30	6.9N	142.7E	30	6	0	8.1N	142.6E	45	59	-5	--.-	---.-	--	--	--	--.-	---.-	--	--	--
080600Z	7.3N	143.0E	35	7.4N	142.8E	35	13	0	9.2N	142.1E	55	94	0	11.1N	138.8E	70	36	10	--.-	---.-	--	--	--
081200Z	7.4N	142.6E	35	7.6N	143.1E	40	32	5	9.7N	142.5E	55	92	0	11.3N	139.0E	70	72	5	12.4N	134.2E	85	178	-45
081800Z	7.8N	142.1E	40	7.4N	142.6E	40	38	0	8.2N	142.6E	55	123	-5	10.3N	140.9E	65	283	-5	--.-	---.-	--	--	--
090000Z	8.2N	141.6E	50	8.2N	142.3E	40	41	-10	10.0N	141.0E	55	42	-10	11.7N	137.3E	70	160	-10	12.6N	132.6E	85	289	-10
090600Z	7.9N	141.2E	55	8.2N	140.9E	70	25	15	8.3N	137.4E	90	209	30	9.7N	133.2E	120	288	25	--.-	---.-	--	--	--
091200Z	8.6N	141.4E	55	8.2N	140.9E	70	38	15	8.2N	138.3E	90	245	25	9.2N	134.4E	115	363	-15	10.8N	130.7E	125	496	-20
091800Z	9.4N	140.9E	60	9.4N	140.7E	75	12	15	10.2N	137.8E	95	179	25	11.2N	133.9E	120	316	-35	--.-	---.-	--	--	--
100000Z	10.1N	140.3E	65	9.9N	140.3E	75	12	10	10.7N	137.0E	95	202	15	11.5N	133.0E	120	358	-35	13.2N	129.4E	125	426	0
100600Z	11.2N	139.4E	60	11.1N	139.4E	75	6	15	12.5N	135.6E	95	136	0	13.4N	131.6E	120	302	-30	--.-	---.-	--	--	--
101200Z	12.3N	138.3E	65	12.3N	138.3E	75	0	10	15.0N	134.0E	85	64	-45	16.8N	129.8E	90	144	-55	19.3N	127.3E	90	139	-20
101800Z	13.1N	137.0E	70	13.3N	136.9E	75	13	5	15.9N	131.7E	85	8	-70	18.0N	128.3E	85	87	-50	--.-	---.-	--	--	--
110000Z	13.8N	135.6E	80	13.8N	135.6E	80	0	0	16.0N	130.8E	100	61	-55	18.1N	127.2E	110	121	-15	21.4N	126.0E	95	121	-5
110600Z	14.4N	134.3E	95	14.5N	134.4E	90	8	-5	16.6N	129.5E	110	80	-40	19.1N	126.3E	115	111	-5	--.-	---.-	--	--	--
111200Z	15.1N	132.9E	130	14.9N	132.8E	130	13	0	17.4N	127.9E	125	88	-20	20.4N	126.0E	95	87	-15	26.1N	130.2E	65	110	-25
111800Z	16.0N	131.6E	155	15.7N	131.8E	155	21	0	18.6N	127.7E	125	49	-10	22.3N	127.3E	100	28	-5	--.-	---.-	--	--	--
120000Z	16.9N	130.3E	155	16.9N	130.2E	155	6	0	20.8N	126.7E	110	61	-15	25.7N	129.7E	85	209	-15	--.-	---.-	--	--	--
120600Z	17.9N	129.2E	150	18.0N	129.0E	140	13	-10	22.2N	127.2E	100	84	-20	27.3N	132.0E	55	305	-40	--.-	---.-	--	--	--
121200Z	18.8N	128.4E	145	18.7N	128.4E	135	6	-10	22.4N	127.0E	100	48	-10	27.3N	131.0E	60	184	-30	--.-	---.-	--	--	--
121800Z	19.4N	127.9E	135	19.4N	127.8E	135	6	0	23.0N	127.1E	100	45	-5	27.9N	132.2E	60	156	-25	--.-	---.-	--	--	--
130000Z	20.1N	127.5E	125	20.0N	127.5E	130	6	5	24.3N	127.8E	100	79	0	29.6N	135.5E	40	228	-40	--.-	---.-	--	--	--
130600Z	20.8N	127.1E	120	21.0N	127.2E	125	13	5	26.1N	129.4E	85	153	-10	30.9N	138.5E	40	238	-35	--.-	---.-	--	--	--
131200Z	21.6N	126.9E	110	21.7N	127.1E	110	13	0	27.3N	130.4E	75	160	-15	--.-	---.-	--	--	--	--.-	---.-	--	--	--
131800Z	22.3N	126.8E	105	22.4N	126.7E	100	8	-5	27.7N	130.3E	70	82	-15	--.-	---.-	--	--	--	--.-	---.-	--	--	--
140000Z	23.2N	127.0E	100	23.4N	127.2E	90	16	-10	28.8N	132.9E	50	92	-30	--.-	---.-	--	--	--	--.-	---.-	--	--	--
140600Z	24.2N	127.5E	95	24.1N	127.5E	95	6	0	29.2N	133.7E	50	37	-25	--.-	---.-	--	--	--	--.-	---.-	--	--	--
141200Z	25.4N	128.3E	90	25.0N	128.5E	95	16	5	30.7N	136.7E	50	67	-15	--.-	---.-	--	--	--	--.-	---.-	--	--	--
141800Z	26.4N	129.8E	85	26.3N	129.6E	90	12	5	--.-	---.-	--	--	--	--.-	---.-	--	--	--	--.-	---.-	--	--	--
150000Z	27.6N	131.8E	80	27.5N	131.8E	75	6	-5	--.-	---.-	--	--	--	--.-	---.-	--	--	--	--.-	---.-	--	--	--
150600Z	29.1N	134.4E	75	29.0N	134.7E	80	17	5	--.-	---.-	--	--	--	--.-	---.-	--	--	--	--.-	---.-	--	--	--
151200Z	30.7N	138.0E	65	30.9N	137.6E	60	24	-5	--.-	---.-	--	--	--	--.-	---.-	--	--	--	--.-	---.-	--	--	--

TYPHOONS WHILE WIND OVER 35KTS

	WARNING	24-HR	48-HR	72-HR
AVERAGE FORECAST ERROR	15NM	98NM	194NM	251NM
AVERAGE RIGHT ANGLE ERROR	9NM	50NM	78NM	123NM
AVERAGE MAGNITUDE OF WIND ERROR	6KTS	19KTS	24KTS	26KTS
AVERAGE BIAS OF WIND ERROR	2KTS	-12KTS	-20KTS	-26KTS
NUMBER OF FORECASTS	30	27	21	7

ALL FORECASTS

WARNING	24-HR	48-HR	72-HR
14NM	98NM	194NM	251NM
9NM	50NM	78NM	123NM
6KTS	19KTS	24KTS	26KTS
2KTS	-12KTS	-20KTS	-26KTS
31	27	21	7